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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,943	06/26/2003	Victor J. Stolpman	873.0124.U1(US)	7557
29683	7590	02/08/2005	EXAMINER	
HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212			BAKER, STEPHEN M	
			ART UNIT	PAPER NUMBER
			2133	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/608,943		STOLPMAN, VICTOR J.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Stephen M. Baker		2133	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 and 15-19 is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 7-10 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>062603</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 14 is objected to because of the following informalities: in line 5, "values" apparently should be "value". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published article to Cox et al (hereafter "Cox").

Cox discloses an encoder for generating framed (terminated) rate-compatible punctured convolutional codes (which are "error reduction codes"), implemented by a programmable DSP. The terminated punctured codeword so generated is "a codeword defining N codeword elements and K information elements coded at a code rate  $R-K/(N-P)$ , wherein P is a number of punctured elements of the codeword". The processes of generating the mother code and of puncturing the mother code are shown by Cox as being performed in two separate stages (figure 7). The puncturing process shown by Cox uses a puncturing table. A region of DSP program memory with instructions for implementing the mother code encoding process shown by Cox

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would provide “a first storage location for storing an error reduction code mother code”.

A region of DSP memory for storing the puncturing process table shown by Cox for the highest rate rate-compatible puncturing scheme would provide “a second storage location for storing a maximum puncturing sequence  $S_{\max}$ , wherein  $S_{\max}$  is the puncture sequence for a maximum code rate  $R_{\max}$ , and further wherein  $S_{\max}$  comprises a subset  $S_1$  that is a puncture sequence for a minimum code rate  $R_1$ ”.

Regarding claim 1, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the rate-compatible punctured convolutional coding disclosed by Cox by using a “first storage location for storing an error reduction code mother code” and a “second storage location for storing a maximum puncturing sequence  $S_{\max}$ , wherein  $S_{\max}$  is the puncture sequence for a maximum code rate  $R_{\max}$ , and further wherein  $S_{\max}$  comprises a subset  $S_1$  that is a puncture sequence for a minimum code rate  $R_1$ ” because the process of generating the mother code and of puncturing the mother code are shown by Cox as being performed in two separate stages, and because the rate-compatible punctured convolutional coding disclosed by Cox is implemented by a processor with programmed instructions.

Regarding claim 2, the DSP for implementing the rate-compatible punctured convolutional coding disclosed by Cox implements processing for both transmitting and receiving the punctured convolutional codes.

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4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published article to Kim et al (hereafter "Kim").

Kim discloses an encoder for generating framed (terminated) rate-compatible punctured convolutional codes (which are "error reduction codes"). The terminated punctured codeword so generated is "a codeword defining  $N$  codeword elements and  $K$  information elements coded at a code rate  $R-K/(N-P)$ , wherein  $P$  is a number of punctured elements of the codeword". The processes of generating the mother code (figure 1) and of subsequently puncturing the mother code (figure 2) are described by Kim as being performed in two separate stages. The puncturing process shown by Kim uses a puncturing table. A region of program memory with instructions for implementing the mother code encoding process shown by Kim would provide "a first storage location for storing an error reduction code mother code". A region of processor memory for storing the puncturing process table shown by Kim for the highest rate rate-compatible puncturing scheme would provide "a second storage location for storing a maximum puncturing sequence  $S_{\max}$ , wherein  $S_{\max}$  is the puncture sequence for a maximum code rate  $R_{\max}$ , and further wherein  $S_{\max}$  comprises a subset  $S_1$  that is a puncture sequence for a minimum code rate  $R_1$ ".

Regarding claim 1, Official Notice is given that the convenience of implementing a channel coder by means of a processor with programmed instructions was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the rate-compatible punctured convolutional coding disclosed by Kim by using a "first

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storage location for storing an error reduction code mother code" and a "second storage location for storing a maximum puncturing sequence  $S_{\max}$ , wherein  $S_{\max}$  is the puncture sequence for a maximum code rate  $R_{\max}$ , and further wherein  $S_{\max}$  comprises a subset  $S_1$  that is a puncture sequence for a minimum code rate  $R_1$ " because the process of generating the mother code and of puncturing the mother code are shown by Kim as being performed in two separate stages, and because the convenience of implementing a channel coder by means of a processor with programmed instructions was already well known.

Regarding claim 2, the rate-compatible punctured convolutional coding disclosed by Kim is part of a transmitter for transmitting the punctured convolutional codes.

Regarding claim 3, Kim shows (figure 2) a punctured code with all parity bits punctured ( $PT_0$ ).

Regarding claims 4-6, Kim shows (figure 2) five different code rates, with the codes collectively meeting the recited puncturing limitations.

### ***Allowable Subject Matter***

5. Claims 11-19 are allowed.
6. Claims 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Stephen M. Baker  
Primary Examiner  
Art Unit 2133

smb